Examining Teachers Practice: Enhancing Reading Comprehension for Students with Autism Spectrum Disorder

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Abstract

Providing instruction to students with autism spectrum disorder (ASD) can be challenging for teachers since students can have a range of unique learning needs, particularly in reading comprehension. Given that reading comprehension is a complex process requiring the use of various knowledge and skills simultaneously, many students with ASD often struggle and score significantly lower on comprehension assessments compared to their typically developing peers, as well as other peers with disabilities. Unfortunately, there is little research on the instructional practice teachers utilize in the classroom to build the comprehension of students with ASD. Thus, this multi-case study's primary purpose was to identify the instructional practices and activities that four special education teachers used to enhance the reading comprehension of their students with ASD. To do so, the researchers conducted multiple classroom observations and five interviews per teacher, including an introductory, post-lessons, and final. The findings demonstrate that special education teachers have both the knowledge and skills to support their students with ASD in comprehension development by implementing components of evidence-based instructional practices and supports. However, there is a continued need for these teachers to find ways to both assess and deepen their students' higher-order thinking skills related to texts. Implications and limitations are discussed.

Key Words: Teacher practice; reading comprehension; evidence-based practices; autism spectrum disorder; multi-case study

Introduction

Over the last 20 years, there has been a significant increase in students receiving services for autism spectrum disorder (ASD). Today, one in 59 children in the United States (US) are diagnosed with ASD, compared to one in 150 just over a decade ago (Center for Disease Control and Prevention [CDC], 2018). This has led to an increase in the number of students in public schools receiving services for disabilities (13%), of which 10% of these students receive support for ASD (US Department of Education, 2018). While the US Individuals with Disabilities Education Improvement Act [IDEIA] (2004) amendment ensures that all students, including those with disabilities, have access to free and appropriate public education (Mastropieri & Scruggs, 2010).

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It also ensures that students have access to quality and rigorous curriculum aligned to their peers in general education classrooms (IDEIA, 2004). Due to the requirements of these laws, there is an increased demand for US educators to be prepared with teaching strategies that lead to successful learning outcomes for all students (Brock, Huber, Carter, Juarez, & Warren, 2014) by determining instructional supports that will meet the unique needs of their learners without jeopardizing expectations (Williamson, 2012). Thus, with the growing rate of students with intensive and individualized academic needs, and the fortification of policies designed to support them, educators must use intensive and evidence-based academic interventions to help their students with ASD succeed. While there is specific research demonstrating educators' practices for supporting the common challenges of communication and behavior of students with ASD, little is known about the practices teachers are implementing to also support the unique academic challenges. Thus, this research study will contribute to the small body of literature providing teacher educators with insight into current special education teacher practices which will enable them to prepare future teachers adequately.

Reading comprehension and ASD

Given the heterogeneous nature of students diagnosed with ASD, teachers must provide appropriate supports to develop all skills, including in academics (Karim, 2009; Finnegan, 2019). Emerging research demonstrates that students with ASD show difficulties in reading, specifically reading comprehension (McIntyre et al., 2017). There is evidence of interventions and supports that have shown positive outcomes and been suggested for students with ASD in reading comprehension, such as explicit strategy instruction (Carnahan & Williamson, 2013); cooperative pairs/groupings (Whalon & Hanline, 2008), the use of graphic organizers (Bethune & Wood, 2013), and packaged vocabulary interventions (Cravalho, Jimenez, Shhub, & Solis, 2020). While some survey research exists examining teacher practices related to developing students' comprehension skills of their students with ASD, little is known about how these practices are used in the classroom (Accardo & Finnegan, 2019). Due to the complexities of developing reading comprehension skills paired with the unique and complicated academics needs of students with ASD, understanding more about special education teacher practice will lead to better preparation and support for special education teachers and their students.

Reading comprehension is a critical skill (Cunningham & Stanovich, 1998) as it fosters critical thinking skills that are essential for other school subjects and students' personal and professional lives (Snow, 2002). However, it is also a complex process that requires the use of various knowledge and skills simultaneously (Snow, 2002). Given their unique needs, students with ASD typically require additional supports to develop their comprehension skills.

While students with ASD range in their ability on a broad spectrum, students with

ASD demonstrate stronger word recognition skills compared to their reading comprehension (Nation, Clark, Wright, & Williams 2006). For example, McIntyre and colleagues (2017) compared reading comprehension levels of students with ASD to typically developing peers and those identified with attention deficit hyperactivity disorder (ADHD) and found that students with high-functioning ASD scored significantly lower on comprehension assessments. Thus, research specifically examining interventions and supports to increase reading comprehension skills for students with ASD has emerged over the last decade.

Most intervention research for students with ASD focuses primarily on analyzing and addressing students' social, emotional, and behavioral needs (i.e., Bellini, Peters, Benner, & Hopf, 2007; Wang & Spillane, 2009; Wolstencroft et al., 2018). Despite all of the research that exists to meet the needs of students with ASD, studies on academic instructional strategies have only begun to emerge over the last decade. Several reviews of the literature provide an overview of the evidence-based practices (EBP) demonstrating positive reading comprehension outcomes for students with ASD (i.e., Chiang & Lin, 2007; Finnegan & Mazine, 2016).

In an original yet still relevant review, Chiang and Lin (2007) examined the instructional strategies that supported the development of reading comprehension for students with ASD. Among the studies found for their review, several strategies supported positive outcomes for students with ASD, including class-wide peer tutoring, cooperative learning, anaphoric cueing, and self-directed strategies. A later review continued to build upon those before it. El Zein, Solis, Vaughn, and McCulley (2014) added to the list of strategies showing positive results for students with ASD, including strategy instruction graphic organizers (Stringfield, Luscre, & Gast 2011; Van Riper, 2010), explicit strategy instruction (Knight, 2010) and a direct instruction intervention called Corrective Reading (Flores & Ganz, 2007; Ganz & Flores, 2009). Based on their findings, reviewers found that researchers should consider further reading comprehension research, considering in particular how these plans are adapted to meet the needs of students with ASD who were significantly behind in reading comprehension. Although the reviews of interventions supporting reading comprehension show positive results, most of the studies do not consider students' unique and individual needs Specifically, educators need to consider more of their students with ASD as independent and having unique needs. Moreover, they need to consider how adaption of strategy instruction is important for the continued development of reading comprehension for students with ASD.

In a recent systematic review, Singh et al. (2020), examined reading comprehension interventions for students with ASD. Focusing specifically on single-case design, results demonstrated that the use of visuals, metacognitive strategies and adapted texts showed significant effects while collaborative strategies and technology assisted were only moderately effective. Furthermore, additional recent research supporting instruc-

tion for students with ASD, expands on the literature, considering unique and individual needs. For example, Finnegan and Accardo (2018) recommended a specific set of packaged strategies to support readers with ASD, including the use of story map graphic organizers, as well as anaphoric cueing, and question-answer-relationship (QAR). El Zein and colleagues (2014) examined the effects of perseverative or preferred interest texts on students reading comprehension. Results showed that student comprehension was higher (70% accuracy vs 38%) during treatment. In another recent study, the authors considered the common behavioral needs of students with ASD. In their intervention, Singh et al. (2017) combined reciprocal teaching and behavior skills training (BST) to increase reading comprehension. BST included four components, instruction, modeling, rehearsal, and feedback, and embedded this procedure into each of the four components of reciprocal teaching (predicting, questioning, clarifying, and summarizing). Results demonstrated positive results for all reading comprehension measures, with the greatest impact on student's ability to make predictions, clarify, and question. Though recent research and literature on instructional practices demonstrate positive effects for students with ASD, there is a discrepancy between what research says is impactful and what teachers claim is effective for teaching reading comprehension to their students (Accardo & Finnegan, 2019). Because much of the research discussed above related to positive outcomes for students with ASD are conducted in controlled environments and completed by researchers, there is a gap in research specifically looking at these practices being implemented in typical school environments by special education teachers.

Teacher reading comprehension instructional practice and ASD

Given that teacher instruction in reading comprehension is linked to learner outcomes, it is essential to understand teachers' instructional practices (NRP, 2000), which can inform effective teacher preparation and ongoing support (Accardo, Finnegan, Gulkus, & Papay, 2017). However, given that there is sparse research examining reading comprehension and ASD, there is limited research on teachers' instructional strategies and how they adapt instruction for students with ASD (Brock et al., 2014). Because students with ASD do not always respond to traditional instructional strategies for reading comprehension, teachers must intensify instruction to align with their students' needs (Nation et al., 2006). The question is whether they are doing so in the classroom. If so, what does it look like?

Some survey studies have investigated whether or not teachers are using appropriate teaching practices to teach reading comprehension to students with ASD (e.g., Accardo, & Finnegan, 2019; Brock et al., 2014). For example, Accardo and Finnegan (2019) surveyed 112 teachers gathering the perceptions and experiences of educators as well as the reported use of EBP. Overall, results showed that there is research to practice gap. The researchers found that only 5% of teachers surveyed are comfort-

able teaching reading comprehension to students with ASD using EBPs. Likewise, Brock and colleagues (2014) surveyed 450 teachers and administrators about their confidence utilizing EBPs to instruct students with ASD in reading comprehension. In general, practitioners were not particularly confident in using the 24 identified EBPs (e.g., prompting, peer-mediated interventions). This study also showed a gap between research and practice. While both of these studies provide useful information, it is difficult to know what teachers are doing without observing their teaching. Additional studies, including both interview and observation, also helps to determine whether effective practices are being used.

In a recent interview study, 12 special education teachers shared their perspectives and experiences teaching students reading comprehension to students with ASD (Braun & Hughes, 2020). Teachers were asked to discuss the instructional strategies they utilize, what works, and what continued challenges they face. Teachers stated they were using several evidence-based strategies such as graphic organizers, explicit strategy instruction, and gradual release methods with multiple opportunities to practice, as well as prompting and scaffolding. Despite this, teachers reported that they continue to face challenges in finding strategies to support higher-order thinking skills such as inferencing. While this research added to the identified strategies some teachers use, it also lacks observation of teacher practices, thus the development of a more in-depth case study, including classroom observation.

There is limited research on the experiences, perspectives, and practices of special education teachers tasked with providing reading comprehension to students with ASD. Much of the research on teachers' perceptions and experiences focus on the management of the behavior of students with ASD, rather than on reading instruction (e.g., Syriopoulou-Delli, Cassimos, Tripsianis, & Polychronopoulou 2012). Therefore, future research should continue to look at special education teachers' instructional strategies to support reading comprehension development for students with ASD through observation in the classroom.

Purpose of the study

Though some research exists on reading comprehension and ASD (e.g., McIntyre et al., 2017), teachers continue to challenge how to develop comprehension skills in their students with ASD (Densen, 2010). Students with ASD have such a vast and broad spectrum of needs that selecting the appropriate strategy is difficult (Whalon, 2018); thus, interventions need to be individualized to meet their unique needs. Several survey studies show that teachers are not confident in utilizing those practices (Accardo & Finnegan, 2019). Specifically, special education teachers struggle to find and implement strategies to teach higher-order thinking skills, such as making inferences, meaningful predictions, and identifying the author's purpose (Braun & Hughes, 2020). Likewise, another consideration is to determine if teachers are using practices

they claim and if they are using them correctly (Accardo et al., 2017). Thus, researchers recommend more studies observing teachers during instruction to determine the practices they are using (e.g., Accardo et al., 2017; Brock et al., 2014).

This qualitative multi-case study (Stake, 2006) was designed to dig deeper into special education teacher practice by observing four special education teachers during their reading instruction; and conducting follow-up interviews to gain greater insights into the practices teachers are using to support their students with ASD. Using multiple case studies allowed the researchers to determine commonalities and differences. The following research questions were investigated:

1. What practices and instructional activities do special education teachers of students with ASD in grades 4-8 implement during comprehension instruction?
2. How do teachers individualize comprehension instruction to support a student with ASD in grades 4-8?

Methods

Participants

Four certified, currently practicing special education teachers participated in the study. Teachers were recruited from a large US school district in the Midwest, with each of the teachers located at a different school in various parts of the city. In this school district students with ASD, who require intensive reading instruction, are provided reading instruction by special education teachers in settings outside of the general education classroom. The special education teachers in this study were all in their fifth year of teaching, and each had spent their entire careers thus far at their current school. All four teachers had a Masters in Special Education, with two receiving their degrees from traditional teacher education programs and two from alternative certification programs. The students in this study were considered the focal students. They met the following criteria: diagnosed with ASD, grades 4-8, receive specialized services for reading in a resource classroom within a general education school, and were at least two reading levels behind grade level. The students were not active participants and were not expected to interact with the researchers at any time other than the assent meeting., When the teacher and researchers reflected on the lesson, the researchers asked specific questions related to their reading instruction for the focal student.

Instrumentation

Six formal observations and at least three information visits per teacher during their literacy instruction period were conducted over six to nine weeks. Each teacher was observed or visited at least once a week, but no more than twice a week. During formal observations, an adapted version of the Instructional Content Emphasis–Revised (ICE-R, Edmonds & Briggs, 2003) was used to record and code teachers' litera-

cy instruction. Extensive open field-notes were also collected during each observation. Informal visits occurred at least three times during the study. During informal visits, the researchers conducted informal observations related specifically to the teacher's teaching practices related focal student's literacy instruction..

Five interviews (1 initial interview, 3 post-lesson interviews, and 1 final) per teacher were conducted. Overall, the purpose of the initial teacher interview was to help understand the instructional practices implemented by the teacher. The post-lesson interviews guided the teachers through the reflection process of the practices seen during the observations. The final interview served as wrapped up of experiences seen across the observations. The interviews were semi-structured, allowing for a natural conversation flow regarding the teachers' practices. The semi-structured interviews were designed with prompts directly connected to formal observations (Merriam & Tisdell, 2015). The interview questions were developed through a variety of sources. First, the researchers conducted a pilot study solely interviewing special educators on their experiences teaching reading for students with ASD (Braun & Hughes, 2020). Based on the results, additional questions emerged and were included in this study. Second, the researchers used personal former practitioner experiences as a special educator and instructional coach to help design questions. Finally, the researchers examined prior studies with both teacher observations and perspectives. All interviews were recorded and transcribed. A summary of the transcripts was sent to the teachers for review and to suggest any changes needed.

Procedures

Data collection began with an initial interview with each teacher, which lasted 45-60 minutes. Also, during this time, observation and post-lesson interview schedules were determined. The time of day, amount of time, any day of the week was entirely up to the teacher so as not to disturb the natural flow of the school day. Following the first meeting, the researchers conducted six formal observations and at least three informal visits during reading instruction. Although students with ASD are included in the general education school, in this school district for at least part of the day, students were provided reading instruction by a special education teacher in a resource classroom apart from the typical general education class. During observations, the researchers sat off to the side and did not initiate interaction with the teacher and did not ask the teacher to make any adjustments to instruction. An additional research assistant was present for 25% of the total observations across the four classrooms after extensive training. The mean agreement was 93% across these observations, with a range from 89% to 96%. The researchers and teacher also participated in three post-lesson interviews closely following the second, fourth, and six formal observations. After completing all of the observations, informal visits, and post-lesson interviews, the final interview was conducted.

Data analysis

For this study, a multiple case study design was used, which allowed the researchers to explore data between the cases and then draw comparisons to form conclusions in a cross-case analysis (Yin, 2017). To complete a multiple case study design, evidence was collected on each case separately. Each report from an individual special education teacher was written as a unique case; then, a final analysis was completed concluding cases, developing theories and implications (Yin, 2017). To analyze the qualitative data, the researchers began by coding the data into various categories using discourse that was developed by the researchers, and that came from the data itself. Once the categories began to show commonalities across, they were refined. Along the way, analytic memos were recorded, helping to build the cases. She then, compared and contrasted the codes developed from the categories through cross-validation and triangulation (Patton, 2015) to develop a matrix and eventually themes (Strauss & Corbin, 1994).

To eliminate chances for biases, the researchers recognized positionality by engaging in reflection and self-evaluation of personal beliefs, norms, experiences, and preconceptions and how they might have contributed to the given research position (Trainor & Graue, 2014). Furthermore, to address research bias in the analysis of the qualitative data, interrater reliability was established. In doing so, once initial codes were established, the interrater coded at least 30% of the analysis tools. The researchers analyzed the interrater reliability, and across the tools, the mean was 90%, with a range of 82% to 94%.

Findings

Once each teacher's case was examined individually, the data across all four teachers were analyzed, and comparisons were made between each of the teachers' instructional practices related to comprehension instruction and individualized strategies for students with ASD.

Comprehension instruction

After analyzing the amount of instructional time, the teachers spent on various literacy instruction components, results showed that comprehension instruction was utilized more than any other instructional component by three of the four teachers during their literacy block (see Figure 1). Of the five sub-components that were possible for comprehension instruction, the three that were implemented by each of the teachers included vocabulary/oral language, predicting/prior knowledge, and comprehension monitoring. While some implemented other components of comprehension, such as strategy instruction and story/structural analysis, they were not implemented by all the teachers, and aside from one [Mrs. Johnson], were rarely implemented.
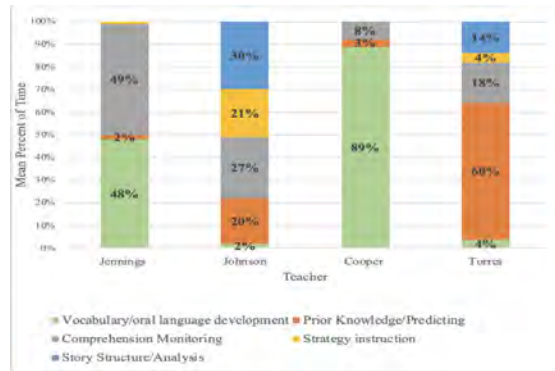
Figure 1: Comprehension sub-components across teachers

Vocabulary

All teachers took informal approaches to enhance the vocabulary of their students during comprehension instruction. For example, Ms. Jennings and Mr. Torres intentionally taught new words before reading a text. For instance, before each reading, Mrs. Jennings spent time introducing new words by giving the definition and putting it into context. Likewise, Mr. Torres often selected specific words and briefly reviewed their meaning as it related to the context of the story they were reading. In contrast, Ms. Johnson and Mr. Cooper did not spend time explicitly teaching new words before reading, though they would stop in-the-moment to discuss pre-determined difficult words. For example, during a lesson, Ms. Johnson stopped while she was reading and gave the students the meaning of the word abroad and explained what it meant in the context of the poem she was reading. Similarly, when Mr. Cooper asked a student to answer a comprehension question about the text, and the student was struggling with the word trilogy, so he asked the student to go back to the text and reread the sentence, then guided him to understand the new word using the context.

Oral language

Oral language development was often connected to vocabulary because the teachers used words students were learning formally and informally to engage them in discussions. For example, Ms. Jennings used direct instruction of vocabulary daily and used the development of these words to encourage students to speak and build their oral language skills. For instance, the students worked on their peacekeeper unit; the term truce was the vocabulary word for the day. Aside from the students using the words in sentences, she also prompted them to use them while answering questions after reading the text. In contrast, Mr. Cooper typically encouraged oral language development by engaging in informal conversations with Samuel focused on topics of interest.

Comprehension monitoring

All teachers used comprehension monitoring to measure student understanding of texts. Comprehension monitoring looked relatively the same in each classroom. The teachers either read a text to the student or had them read it independently and then asked comprehension questions. In the interviews, teachers mentioned that, for their students with ASD, "right-there" questions were more accessible for them to respond to. In the classrooms, the teachers began with these types of questions and then attempted to ask more open-ended, higher-order thinking questions.

Three of the four of the teachers followed up the higher-order thinking questions with why because they often had to break down the questions by offering choices or providing prompts. For example, Ms. Jennings first asked Jerry to "explain what type of decisions Jane Addams made that made her a peacekeeper." When he struggled to answer the questions, she offered him choices, such as "Did she help people get equal pay? Yes, or No" When Jerry answered yes, she followed up with "Why does that make her a peacekeeper?" In three of the classrooms, comprehension monitoring was seen every day because text reading occurred every day. Ms. Johnson always followed up her questions with "show me the evidence in the text."

In all of the classrooms, teachers attempted to ensure that students understood the details of what they were reading by asking questions. Comprehension monitoring was a significant instructional practice in the classrooms. Often it was the only way teachers reflected on "teaching comprehension." Therefore, this singular focus demonstrates a lack of implementation of strategies to teach students to comprehend texts on their own while they are reading.

Strategy instruction

Evidence from the observations demonstrated that only one teacher implemented strategy instruction for any significant amount of time. On average, Ms. Johnson implemented it 21% of the time, but it was not a consistent, daily practice in her classroom. Also, Mr. Torres briefly implemented the strategy (4%), and Ms. Jennings used even less (1%). Moreover, Mr. Cooper did not use it at all. Strategy instruction refers to any form of instruction in which the teacher develops the students' thinking skills through cognitive processing, explicitly visualizing, summarizing, retelling, questioning, or drawing inferences. Most of the time, strategy instruction was more of the teachers' modeling the cognitive process than their explicitly teaching the students how to utilize the strategies themselves to process their thoughts and build comprehension.

Each of the teachers mentioned that students struggled to make inferences, yet how to make inferences was rarely taught, if at all. Unlike the other classrooms, at times, Ms. Johnson used explicit instruction to teach students strategies related to thinking and reading to determine essential details. Likewise, she encouraged students

to infer based on implicit details and then use textual evidence to support their inferences. Similarly, Mr. Torres encouraged his students to think while they read to help them come up with questions and to summarize key details in a text by often saying a phrase such as "good readers think about the details while they are reading.".

Prior knowledge

As part of strategy instruction, but measured separately on the observation tool, activating prior knowledge was seen informally and often done quickly in three of the four of the teachers' classrooms. However, Mr. Torres spent much of his comprehension instruction utilizing this practice. For the other three teachers, this instructional activity was usually seen to ask quick questions or engage in a brief activity before. For example, Mr. Cooper showed the students the movie trailer. Before reading a text such as a chapter on Jackie Robinson, Ms. Jennings asked the students to recall their Black History Month projects by asking, "Who did their project on Jackie Robinson…can you share a fact on what you learned about him?" Ms. Johnson also asked questions such as, "This poem is about a dream…what is a dream?…When do you dream?... What are some dreams you have had?" Mr. Torres spent a significant amount of time using this instructional activity to build understanding by previewing the text, asking questions such as "What did we learn last week when we read the book that is similar to this?" Also, daily, he had the students make predictions after looking at pictures, intentionally pointing out words or phrases.

Story structure analysis

Both Ms. Johnson and Mr. Torres' used story/structural analysis frequently to help students develop meaning around a text. However, this instructional activity was not evident in Ms. Jennings or Mr. Cooper's classrooms. For example, Ms. Johnson spent a significant amount of time instructing students on identifying the setting of a text as well as the characters' perspectives or feelings in a given situation. She built this up to show the "possible influence between setting and character feeling or action." Mr. Torres used instructional strategies to develop the meaning of a text using structural analysis in both fiction and nonfiction.

Individualization

"As a special educator, individualization is something I do all of the time sometimes without thinking," stated Ms. Johnson. This was a commonality across all four of the teachers. Though each teacher individualized instruction in their own way, there are notable similarities across teachers. Individualization to support learners across all four teachers occurred through differentiated small groups, questioning supports, and supplemental tools and resources.

Differentiated small groups

All teachers showed evidence and expressed the importance of considering students' individual needs, especially those with ASD. In all classrooms, individualization was highly evident, especially during differentiated small group time. During the time in the reading and writing centers, Ms. Jennings' students each completed content specific individualized work. For example, students at the reading center read individual leveled books and answered the teacher made questions. Jerry was typically asked open-ended questions and asked to explain "why." At the writing center, one student might be journaling while another is correcting punctuation in sentences. Ms. Jennings' stated that: "Even though they are in small groups at the center, they are working on their IEP goals." Ms. Jennings' classroom small groups were just students working at centers in smaller groups of students; however, they did not interact with one another, and all work was completed individually. During the time in the centers, Mr. Coopers, individualization was evident in several ways, "It is important to teach them where they are at…" and it was evident by the variety of centers that he created for each student based on their needs and goals. Mr. Torres differentiates all of the instruction by a small group; as a resource teacher, he assesses all of the students on his caseload and then forms groups based on reading level. Ms. Johnson uses small groups frequently as a way for students to get more targeted practice to the whole group. She often broke them based on instructional level or needed or based on behavior. As such, if Denzel was struggling on a particular day with a student, she moved around groups to ensure he was set up for success with his peers. Also, Mr. Johnson used small group instruction to reinforce whole group skills and provide additional independent supported practice and to be able to provide feedback. When speaking about a successful lesson with Denzel, Ms. Johnson mentioned that he works so well one on one because he is getting the attention he needs, and she can drill down the skills and provide prompting. Despite this being positive, she mentioned she wanted to do more of the one-on-one work which she could do because of the paraprofessional support. However, she added, "I need to get admin on board because they want to see mostly whole and a small group where students are engaged with one another. "While each of the teachers' purposes for using differentiated small group instruction was different, it was evident in each of the classrooms. However, Ms. Johnson and Mr. Torres most closely utilize them as a way to provide specific and individualized supports to help students access grade-level content, whereas Ms. Jennings and Mr. Cooper individualized work to meet students at their level.

Questioning supports

The teachers all discussed their work with scaffolding or supporting questioning. Typically, this occurred in two separate ways, including preplanned questions or on a contingency basis. The first was using preplanned questions, such as in Ms. Johnson's

class. She considered the students' needs, both what they could do and what they needed to practice in and designed text-based discussions aligned with the standards and students level and created a tiered question system. Likewise, Mr. Torres utilized scaffolded questions both created by him and from the intervention program. Similarly, Mr. Cooper mentioned using the individualized questions from his prescribed curriculum as well when asking students questions. From a different perspective, teachers supported students in answering questions on a contingency basis. For example, in-the-moment many of the students demonstrated challenges answering questions related to the text, primarily open-ended. Likewise, they struggled to answer questions with challenging vocabulary, so in many different ways, the teachers provided support. For example, Ms. Jennings rephrased, and Mr. Cooper broke down questions to offer choices. They both also provided sentence stems to get the students started. Missing from support on questioning was teaching students to ask questions both during and after reading. Likewise, aside from Ms. Johnson, the teachers are often going back and forth between themselves and the student and not encourage students to ask and answer questions from peer to peer. However, there was minimal to no evidence in the classrooms of support or teaching to engage with peers to discuss a text.

Supplemental tools and resources

All four teachers used their experiences, knowledge, and search skills to find various tools and resources to help differentiate learning for students to access and master the content that was being delivered. Teachers utilized visuals for their students with ASD, because as Mr. Cooper sdtated, "Visuals help students to develop an understanding of new content." There was evidence of visuals in all classrooms, such as the use of PowerPoints, anchor charts, graphic organizers, and within the texts themselves. Likewise, all teachers used graphic organizers or note-taking tools to support their students' comprehension and organization of ideas and thoughts. Teachers used a variety of ways to allow students to access texts; for example, listening to text read by the teachers; chunking text to make it easier to read and organize thoughts, and giving students texts that were at their levels. Several teachers pulled selected leveled books or modeled texts from Readworks.org. Finally, outside of their regular curriculum, the students all had access to other resources such as computer-based interventions.

Discussion

Research on EBPs to support reading comprehension in students with ASD has emerged (e.g., Finnegan & Mazine, 2016; Sartini, Knight, Spriggs, Allday, 2018), but there is a limited understanding of how the instruction translate to teacher practice, specifically supporting the individual reading needs of students with ASD (Accardo & Finnegan, 2017; Brock et al., 2014). Most of the research in this area was conducted through surveys (e.g., Accardo & Finnegan, 2017; Accardo et al., 2017; Knight et al.,

2019) rather than developing a rich and thick case of teacher practice. The current study employed a multi-case study design with four special education teachers' instructional practices during literacy for the students with ASD. The teachers' findings showed a large portion of their literacy block focused on comprehension development, and across the teachers, various subcomponents of comprehension were implemented. Throughout all comprehension instruction, all of the teachers used components of evidence-based practices for teaching reading comprehension. Also, a variety of differentiated or individualized supports were used by the teachers.

Reading comprehension

The overall findings demonstrated that comprehension was the primary focus of reading instruction in most of the classrooms. In general, the primary areas of focus for comprehension instruction across all of the teachers' classrooms were vocabulary and oral language, specifically to develop discussion skills and comprehension monitoring. Results also demonstrated that there was minimal use of instructional practices such as strategy instruction, activating prior knowledge, and story/structure analysis. Although vocabulary instruction was more apparent than other practices, teachers could have enhanced this instruction to ensure the students were developing a vocabulary to support their comprehension. Wright and Cervetti (2017) found that general vocabulary development, as well as teaching specific words from texts, are essential components to developing comprehension. Singh (2020) suggests packaged vocabulary interventions, and while some of the practices were evident in the classrooms, additional support to teachers in this area are needed. In this study, teachers used a variety of ways to enhance vocabulary. They all incorporated a number of direct and indirect instructional practices to teach target words during literacy. Despite introducing new words regularly, teachers need instructional supports to help students with ASD engage with the newly learned vocabulary in various contexts and opportunities. This type of engagement is critical to ensure students internalize and use the words for oral language and developing meaning in a text (Snow, 2002). While some teachers spent time engaging the students with target words by giving examples through visuals, gestures, and sample sentences, some spent more time helping students remember the definition during group instruction and centers. Based on the varied uses of vocabulary instruction across the classrooms, it is apparent that there are still misunderstandings of the instructional practices necessary to teach vocabulary because of the vagueness and vastness of ways it can be implemented (Stahl, 2005).

Engaging students in discussions and providing opportunities to practice meaning-making while thinking critically with their peers is a studied practice with desired outcomes for students (Nystrand, 2006). Across each of the classrooms, the teachers demonstrated the importance of engaging students in oral discussions; however, most discussions were teacher questioning a student one on one; thus, there were few op-

portunities for students to ask questions and discuss texts with peers. Though all teachers posed difficult questions, it was often not a reciprocal dialogue. More so, teachers raised the same questions in different ways to support the students in answering them and often lacked the strategy instruction to help students to derive answers on their own through deep thinking. In addition to teacher-student dialogue, the student-student dialogue is an important and EBP supporting comprehension development (Murphy et al., 2009). Opportunities for peers to engage with one another on a discussion revolved around a text is also a critical skill; however, they were not present in most classrooms. This is most likely the case due to the challenges students with ASD have with engaging in discussions. However, particular strategies may support this, such as task-analyses or picture supports.

Reading comprehension strategy instruction has been researched frequently and, for several decades, has demonstrated consistent positive outcomes for enhancing comprehension (e.g., Dewitz, Jones, & Leahy, 2009). Teachers must spend time explicitly teaching students how to think about what they are reading to identify critical details, summarize, ask, and answer the question. However, strategy instruction was used on a significantly limited basis by the teachers in this study and may be explained by two possible reasons. First, a knowledge to practice gap was evident in teachers like Ms. Johnson and Mr. Torres, who often conveyed their understanding of these strategies during interviews yet were not frequently observed using them during instruction. Second, Mr. Torres followed a scripted intervention. Thus, in his case, the lack of strategy instruction could be explained by the lack of these strategies implemented regularly in the prescribed program.

Individualization
Findings demonstrated common differentiated supports for individualizing and intensifying instruction to meet students' needs, including differentiated small groups and questioning supports. In each of the classrooms, evidence of small differentiated groups was present; however, there was quite a bit of difference across teachers as they varied in their purpose and creation. All of the teachers differentiated their questioning, while some preplanned, others did it in-the-moment. Various forms of differentiated questions such as scaffolds from "right there" questions to higher-order thinking, offering choices, or response prompting by rephrasing questions. While these questions support appeared to help students arrive at an answer, limited supports were put into teaching students how to come up with their questions or unpack questions to answer more challenging ones independently. Throughout this study, there was a clear and consistent knowledge gap for teachers choosing practices to individualize supports their students with ASD specifically. This is consistent with survey findings in the field (Accardo & Finnegan, 2019; Knight et al., 2019). For example, Ms. Jennings was consistently using a version of response prompting, but it was not implemented with

fidelity or consistently for comprehension instruction based on the research (Knight & Sartini, 2014). This was evident because she would prompt at the moment based on student responses but seemed to make up the level of prompt and not follow the typical evidence-based prompt hierarchy. Moreover, visual supports are perhaps the most commonly used and researched tools for comprehension instruction for students with ASD (Rockwell, Griffin, & Jones, 2011; Singh et al., 2020). All the teachers in this study used visual supports variations to help students understand the given content. These visuals, however, were often missing in times they would best support the students, such as developing the understanding of a new word or even when introducing and practicing a comprehension strategy. Also missing from the classroom instruction were specific ways students with ASD could read texts independently and engage with their peers through discussion. It was also noted that teachers continued to employ the same strategies throughout the observations, whether or not they were enhancing students' learning.

Conclusion

Developing reading comprehension skills is a complex yet vital skill for students. All students have a right to high-quality education with access to the grade-level curriculum. For students with unique and specific reading profiles, such as those with ASD, developing reading comprehension can add additional layers of difficulty for teachers to determine the best practices. Findings from this study show that special education teachers are knowledgeable about evidence-based reading comprehension instructional practices. Yet, not all teachers are implementing these practices while instructing students with ASD in resources classes.

Limitations

This study focused on a selective group of special education teachers who specifically instruct literacy to students with ASD in grades four through eight. The instructional setting was also narrow with all of the special education teachers teaching outside of the general education classroom, which was the common practice in the school district. Although students with ASD were included in many aspects of the general education school, students with ASD who required intensive reading instruction were provided with this instruction in resource classes. Nevertheless, the findings of this study can provide valuable information to a specific population, specifically providing educational leaders with ideas regarding professional development and teacher education.

Implications for practice

Educational leaders need to consider how to provide targeted professional development to their teachers in the area of reading comprehension for students with ASD.

As other researchers have found (e.g., Accardo, et al., 2017; Brock et al., 2014), there is a continued need to provide ongoing support for teachers to enhance their skills. They need professional development that includes EBPs for teaching reading comprehension to students with ASD, including ways to assess students and individualize or differentiate practice. More specifically, teachers need skills and knowledge on engaging students with ASD in text-based discussions, how to generalize new comprehension skills, and authentically assess students with ASD deep understanding of a text.

Preservice teacher educators should consider what supports to embed into teacher education programs or courses to ensure their students are prepared with strong content knowledge and skill to instruct students with diverse needs. Preservice educators need support in learning to identify, access, and implement EBPs for reading comprehension as well as assessing students and differentiating supports to individualize instruction for each of their students. For special educators, preservice preparation programs typically offer one methods course for literacy and do not attach opportunities for practice with diverse populations (Leko, Brownell, Sindelar, & Kiely, 2015). Likewise, there are limited courses available for special educators to learn the unique characteristics of students with ASD, specifically related to their reading needs (Johnson, 2018). Thus, courses that provide preservice educators with opportunities to gain literacy content knowledge on both literacy and individualized practices, the assessment of students, understanding unique and individual characteristics benefit teachers. Because gaining knowledge and skill requires experiences within practice, considerations of experiential learning opportunities for preservice educators is needed (Markelz, Riden, & Scheeler, 2017).

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